

## CLAIMS

1           1.     A method for controlling the operation of a power generator, comprising:  
2                     receiving a plurality of fault status signals from a sputtering  
3                     system within a period of time;  
4                     processing the plurality of fault status signals with a fault  
5                     handling algorithm; and  
6                     generating at least one command signal for affecting operating  
7                     characteristics of a power generator.

1           2.     The method of claim 1 further comprising modifying parameters of the  
2     fault handling algorithm during operation of the power generator.

1           3.     The method of claim 2, wherein the parameters of the fault handling  
2     algorithm are modified without recompiling source code.

1           4.     The method of claim 1, wherein the step of processing comprises  
2     performing linear algebra computations.

1           5.     The method of claim 1, wherein the step of processing comprises  
2     performing mathematical operations.

1           6.     The method of claim 5, wherein the mathematical operations are selected  
2     from the group consisting of AND, OR, XOR, NOT, multiplication, addition, subtraction,  
3     division, equal to, greater than, less than, not equal to, greater than or equal to, less than  
4     or equal to, maximum, and minimum.

1           7.     The method of claim 1 further comprising storing the fault handling  
2     algorithm in a memory.

- 1           8.       The method of claim 1 further comprising retrieving the fault handling  
2 algorithm from a memory.  
3
- 1           9.       The method of claim 1, wherein the at least one command signal  
2 comprises a plurality of command signals.  
3
- 1           10.      The method of claim 9, wherein the plurality of command signals are  
2 simultaneously generated.  
3
- 1           11.      The method of claim 1, wherein the plurality of fault status signals are  
2 simultaneously processed with the fault handling algorithm.  
3
- 1           12.      The method of claim 1, wherein the power generator is a DC power  
2 generator.  
3
- 1           13.      The method of claim 1, wherein the power generator is an RF power  
2 generator.  
3
- 1           14.      The method of claim 1, wherein the plurality of fault status signals  
2 correspond to one or more fault types.  
3
- 1           15.      A fault handling system for controlling a power generator of a sputtering  
2 system, the fault handling system comprising:  
3                   a processor in signal communication with the power generator for  
4                   receiving a plurality of fault status signals from the sputtering system  
5                   within a period of time, the processor generating at least one command  
6                   signal for affecting operating characteristics of the power generator by

7                   processing the plurality of fault status signals with a fault handling  
8                   algorithm.

9  
1           16.    The fault handling system of claim 15, wherein parameters of the fault  
2    handling algorithm are specified by an operator during operation of the sputtering system.

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1           17.    The fault handling system of claim 15, wherein modifying parameters of  
2    the fault handling algorithm does not require recompilation of source code.

3  
1           18.    The fault handling system of claim 15, wherein processing comprises  
2    performing linear algebra computations.

3  
1           19.    The fault handling system of claim 15, wherein processing comprises  
2    performing mathematical operations.

3  
1           20.    The fault handling system of claim 19, wherein the mathematical  
2    operations are selected from the group consisting of AND, OR, XOR, NOT,  
3    multiplication, addition, subtraction, and division, equal to, greater than, less than, not  
4    equal to, greater than or equal to, less than or equal to, maximum, and minimum.

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1           21.    The fault handling system of claim 15, wherein the processor is a  
2    component in the power generator.

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1           22.    The fault handling system of claim 15 further comprising a memory for  
2    storing the fault handling algorithm.

3  
1           23.    The fault handling system of claim 15, wherein the plurality of fault status  
2    signals is a vector of signals.

3

- 1           24.    The fault handling system of claim 15, wherein a plurality of command  
2 signals are generated by the processor.  
3
- 1           25.    The fault handling system of claim 24, wherein the plurality of command  
2 signals are simultaneously generated.  
3
- 1           26.    The fault handling system of claim 15, wherein the plurality of fault status  
2 signals are simultaneously processed with the fault handling algorithm.  
3
- 1           27.    The fault handling system of claim 15 further comprising a user interface  
2 for modifying the fault handling algorithm, the user interface in signal communication  
3 with the processor.  
4
- 1           28.    The fault handling system of claim 15, wherein the fault handling system  
2 controls the power generator.  
3
- 1           29.    The fault handling system of claim 15, wherein the power generator is a  
2 DC power generator.  
3
- 1           30.    The fault handling system of claim 15, wherein the power generator is an  
2 RF power generator.  
3
- 1           31.    The fault handling system of claim 15, wherein the operating  
2 characteristics are selected from the group consisting of system output disable, power  
3 block output disable, output enable prevent, and output drive rollback percentage.  
4
- 1           32.    The fault handling system of claim 15, wherein the fault status signals  
2 correspond to one or more fault types.  
3

1            33.    A fault handling system for controlling a power generator of a sputtering  
2 system, the fault handling system comprising:  
3                        a means for receiving a plurality of fault status signals from the  
4                        sputtering system within a period of time and a means for generating at  
5                        least one command signal for affecting operating characteristics of the  
6                        power generator based upon the plurality of fault status signals and a fault  
7                        handling algorithm.  
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